Claims

[c1] 1.A method of automatically optimizing medical three-dimensional visualizations comprising:
isolating a plurality of anatomical structures within the medical three-dimensional visualization;
calculating the number of ray intersects, that intersect more than one of said plurality of anatomical structures, for a plurality of casting angles;
selecting an optimum casting angle that minimizes said ray intersects from one of said plurality casting angles; and
displaying the optimized medical three-dimensional visualization from said optimized casting angle.

[c2] 2.A method as described in claim 1, wherein said optimum casting angle is selected based upon minimizing the number of overlapped pixels in the three-dimensional visualization.

[c3] 3.A method as described in claim 1, further comprising:
approximating a cross-section of each of said plurality of anatomical structures with a geometric shape; and
selecting the optimum casting angle based upon the location and shape of said geometric shapes.

[c4] 4.A method as described in claim 1, further comprising:
calculating and storing the locations of anatomical structure overlap in the optimized medical three-dimensional visualization;
selecting a second casting angle that minimizes said locations of anatomical structure overlap; and
displaying a second three-dimensional visualization from said second casting angle.

[c5] 5.A method as described in claim 1, further comprising:
weighting said ray intersects based upon an importance factor of each of said plurality of anatomical structures; and
selecting an optimum casting angle that minimizes said weighted ray intersects from one of said plurality casting angles.

[c6] 6.A method as described in claim1, further comprising:
automatically removing from the display lower weighted anatomical structures that destruct higher weighted anatomical structures.

[c7] 7.A method as described in claim 1, further comprising:
weighting said ray intersects based upon the size of each of said plurality of anatomical structures; and
selecting an optimum casting angle that minimizes said weighted ray intersects from one of said plurality casting angles.

[c8] 8.A method as described in claim 7, wherein said weighting of ray intersects is based upon percentage of overlap of each of said plurality of anatomical structures.

[c9] 9.A method as described in claim 1, wherein said isolating is accomplished through the use of segmentation techniques.

[c10] 10.A method as described in claim 1, wherein said isolating is accomplished through the use of thresholding techniques
11.A method as described in claim 1, further comprising:
calculating the amount of ray intersect, for ray intersects that intersect more than one of said plurality of anatomical structures, for a plurality of casting angles.

[c11] 12.A method of automatically optimizing medical three-dimensional visualizations comprising:
isolating a plurality of anatomical structures within the medical three-dimensional visualization;
calculating the number of overlaps of said plurality of anatomical structures, for a plurality of casting angles;
selecting an optimum casting angle that minimizes said number of overlaps from one of said plurality casting angles; and
displaying the optimized medical three-dimensional visualization from said optimized casting angle.

[c12] 13.A method as described in claim 12, wherein said optimum casting angle is

selected based upon minimizing the number of overlapped pixels in the three-dimensional visualization

14. A method as described in claim 12, further comprising:
approximating a cross-section of each of said plurality of anatomical structures with a geometric shape; and
selecting the optimum casting angle based upon the location and shape of said geometric shapes.

[c13] 15.A method as described in claim 12, further comprising:
calculating and storing the locations of anatomical structure overlap in the optimized medical three-dimensional visualization;
selecting a second casting angle that minimizes said locations of anatomical structure overlap; and
displaying a second three-dimensional visualization from said second casting angle.

[c14] 16.A method as described in claim 12, further comprising:
weighting said overlaps based upon an importance factor of each of said plurality of anatomical structures; and
selecting an optimum casting angle that minimizes said weighted overlaps from one of said plurality casting angles.

[c15] 17.A method as described in claim 12, further comprising:
weighting said overlaps based upon the size of each of said plurality of anatomical structures; and
selecting an optimum casting angle that minimizes said weighted overlaps from one of said plurality casting angles.

[c16] 18.An apparatus of automatically optimizing medical three-dimensional visualizations comprising:
an isolating component, said isolating component isolating a plurality of anatomical structures within the medical three-dimensional visualization;
a calculator component for calculating the number of overlaps of said plurality of anatomical structures, for a plurality of casting angles;
a selector component, said selector component selecting an optimum casting

angle that minimizes said number of overlaps from one of said plurality casting angles; and

a display element for displaying the optimized medical three-dimensional visualization from said optimized casting angle.

[c17] 19. An apparatus as described in claim 18, further comprising:

a geometric approximator for approximating a cross-section of each of said plurality of anatomical structures with a geometric shape.

[c18] 20.An apparatus as described in claim 18, further comprising:

a weighting component, said weighting component weighting said overlaps based upon the size of each of said plurality of anatomical structures.

[c19] 21.An apparatus as described in claim 18, further comprising:

a weighting component, said weighting component weighting said overlaps based upon an importance factor of each of said plurality of anatomical structures.